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| 09/655,091 | 09/05/2000 | Johann Meseth | GR 98 P 3112 | 8366 |

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| EXAMINER | |
|---|---|
| AWAI, ALEXANDRA F | |
| **ART UNIT** | **PAPER NUMBER** |
| 3663 | |

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
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| 3 MONTHS | 04/23/2007 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/655,091 | MESETH, JOHANN | |
| | Examiner | Art Unit | |
| | Alexandra Awai | 3663 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-4,7-10 and 15-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,7-10 and 15-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments filed 1/29/2007 have been fully considered but they are not persuasive. The amendments to claims 1, 2 and 17-20 are acknowledged. Those rejections that have been overcome are omitted from the present Office Action and are considered withdrawn. Claims 1-4, 7-10 and 15-20 have been examined.

Applicant's new arguments with regard to the claims, which have not been amended to overcome the references, include that the evaluation of the examiner appears to be based completely on hindsight consideration, in which Examiner reinterprets the concept described in Gluntz et al. based only on teachings found in the instant Application. First, Examiner has not reinterpreted the concept described in Gluntz et al., but rather has accurately represented all disclosures provided by Gluntz et al. that are applied in the rejection. There is no teaching that Examiner states is derived from Gluntz et al. that is not in actuality so derived. Second, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Examiner has identified an extrinsic origin for each teaching and suggestion applied in the rejection, and so it cannot be said that the rejection includes knowledge gleaned ***only*** from Applicant's disclosure, because the knowledge is in every case ***also*** derived from an extrinsic source. Rather than pointing out any

inaccuracies in these stated extrinsic origins, Applicant has stated without justification that Examiner's "reinterpretation" is based only on knowledge provided in the instant Application.

It is Applicant's characterization of the instant invention that verges on reinterpretation. In pointing out a difference between the prior art system and the system of the instant invention, Applicant makes the following statement:

> "These two pipes, namely on one hand the condensing pipe and on the hand the drain pipe, are provided and designed for completely different purposes and thus differ from each other gravely in their essential parameters, especially regarding the placing of their respective inlet regions" (Remarks, p. 11).

Although the statement reproduced above appears to suggest that there are numerous (grave) distinctions between the condensing pipe and the drain pipe structures, the only actual difference between them is the one Applicant goes on to point out, and which Examiner has freely acknowledged in the previous Office Action. That is, the inlet of the condensing pipe (14) is well below the condenser (16), while the inlet of the drain pipe (22) is placed above the condenser. The claimed differences in "design" of the pipes are thus confined to length and disposition as seen from Applicant's figure. Both pipes have the conventional hollow cylindrical shell shape, and both may passively operate to condense steam and drain noncondensable gas. It is therefore erroneous to describe the pipes as "completely" different.

As Applicant asserts, the structure of the vertical flow channels disclosed by Gluntz et al. are comparable to the condensing pipe of the instant invention. However, Gluntz et al. specifically teach that noncondensable gas within the drywell is also carried directly and passively into the wetwell through horizontal vents 28, which are connected to the drywell via the vertical flow channels 27 (col. 3, lines 14-23). Rather than providing a coherent argument for the rejection based on prior art teachings and considered reasoning found in the previous Office

Action, Applicant wrongly concludes that Examiner's allegation that it would have been obvious to position to configure the flow channels disclosed by Gluntz et al. to advantageously siphon relatively more noncondensable gas is based exclusively on disclosures from the instant invention. This conclusion fails to address statements in the previous Office Action, including the following:

> "It is a well known fact that noncondensable gases of particular interest in the nuclear field (e.g., hydrogen and nitrogen) are more buoyant than water vapor, leading them to rise and accumulate in relatively higher concentration at the top of the interior space/pressure chamber and thus around the condenser and/or condenser inlet. It is also commonly understood that noncondensable gas from the interior space must be separated from the steam to provide effective operation of condensers (col. 2, lines 57-61). In the absence of active gas separators as provided in the referenced art, or in addition to them to provide redundancy and increase system productivity, passive means such as the flow channels (27) may be used to remove the noncondensable gas (30) and thus improve suppression system performance" (pp. 6-7), and
>
> "Gluntz et al. teach that noncondensable gas (30) siphoned into the condensing chamber is buoyed upwardly through the pool water into the condensing chamber air space disposed above the filling level (col. 3, lines 3-23). This is proof of the widespread understanding of noncondensable gas behavior and a motivation for modifying those flow channels that are *not* configured to siphon relatively more noncondensable gas than steam into the condensing chamber, but rather are configured as condensing pipes" (p. 7).

Applicant states that hint to the concept of deliberately leading noncondensable gases away from the condenser cannot be obtained from Gluntz et al. because, "It is disclosed in Gluntz et al. that the non-condensable is deliberately led with the vapor through the heat exchanger in the flood basin 56, and from there is carried off over the drain pipe 66" (Remarks, p. 13). This statement completely ignores the referenced teaching of Gluntz et al. that the noncondensable gas may be passively diverted through the vertical flow channels, and additionally fails to address Examiner's alternative case of obviousness, wherein the skilled artisan uses the passive noncondensable gas-removal system disclosed by Gluntz et al. in a

region around and above the condenser inlet as such is no more than the advantageous application of a well known expedient in the art (Office Action dated 11/15/2006, p. 7).

Although Applicant states that it "is not understandable how it would be meaningful and helpful for a person skilled in the art to selectively treat the individual channels of the group of channels 27 differently by modifying some" (Remarks, p. 13), Applicant provides no reason whatsoever for this alleged incomprehensibility. Indeed, the modification that Applicant suggests would not be meaningful or helpful directly corresponds to the structure of the instant application. Although modifying the structure of the primary reference, which is the accepted practice for formulating a case of obviousness, would necessarily change its functionality to a certain degree, the modification hypothesized by Examiner would in no way gravely damage the overall system, or prevent it from performing its intended purpose of pressure suppression.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-4, 7-10 and 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gluntz et al. (5,596,613).

Gluntz et al. disclose a pressure suppression containment system for a boiling water reactor comprising an interior space (20), a condensing chamber (22) disposed within and filled with coolant (24), a pressure chamber having a top region, a condenser (54) in fluid

communication with the pressure chamber, and a multiplicity of vertical flow channels (27) that function as both condensing pipes for steam and drain pipes for noncondensable gas. Note that the entry of noncondensable gas into the condensing pipe, or of condensable gas into the drain pipe of the instant invention is unavoidable as well. These vertical flow channels are permanently open flow paths that define a direct connection to the condensing chamber without being connected to the condenser. Their bottom ends are immersed in the coolant of the condensing chamber. The condenser fluidically communicates with the cooling basin (52), which is external to the pressure chamber and open to the atmosphere via vents (58).

The system is configured to transport the noncondensable gas from the pressure chamber to the condensing chamber plenum and actively condense steam from the drywell in the condenser, as well as to passively remove steam and noncondensable gas into the condensing chamber. The second embodiment as set forth in claim 2 – wherein the condenser is in the pressure chamber – is an obvious variant of the first embodiment as discussed in section 2 of this Office action. It is within the purview of the skilled artisan to apply the teachings of Gluntz et al. to this slightly modified known (with regard to the condenser structure/location) system.

It is a well known fact that noncondensable gases of particular interest in the nuclear field (e.g., hydrogen and nitrogen) are more buoyant than water vapor, leading them to rise and accumulate in relatively higher concentration at the top of the interior space/pressure chamber and thus around the condenser and/or condenser inlet. It is also commonly understood that noncondensable gas from the interior space must be separated from the steam to provide effective operation of condensers (col. 2, lines 57-61). In the absence of active gas separators as provided in the referenced art, or in addition to them to provide redundancy and increase system

productivity, passive means such as the flow channels (27) may be used to remove the noncondensable gas (30) and thus improve suppression system performance.

It would have been obvious to one skilled in the art at the time of invention to modify the flow channels disclosed by Gluntz et al. so that their openings would be above the condenser or condenser inlet in order to use those modified flow channels to advantageously siphon relatively more noncondensable gas than steam into the condensing chamber according to well-known scientific phenomena and knowledge commonly available in the art, i.e., configuring them as drain pipes in accordance with claims 1 and 2. Alternatively, it would have been obvious to use a system such as the passive noncondensable gas-removal system defined by the flow channels (27), condensing chamber (22) and coolant (24) disclosed by Gluntz et al. in the region around and above the condenser (54) inlet, as such is no more than the advantageous application of a well known expedient in the art. The motivation to install the system in this way would have been to use a known passive system to augment the active gas separators or serve as a backup to those separators, thus ensuring optimal performance of the condenser.

Gluntz et al. teach that noncondensable gas (30) siphoned into the condensing chamber is buoyed upwardly through the pool water into the condensing chamber air space disposed above the filling level (col. 3, lines 3-23). This is proof of the widespread understanding of noncondensable gas behavior and a motivation for modifying those flow channels that are *not* configured to siphon relatively more noncondensable gas than steam into the condensing chamber, but rather are configured as condensing pipes. That is, it would have been obvious to one skilled in the art at the time of invention to configure the ends of the flow channels functioning as condensing pipes to be below the ends of the drain pipes in order that the buoyant

noncondensable gas being siphoned into the condensing chamber by the drain pipes be prevented from floating back into the interior space via the condensing pipes. Instead, the noncondensable gas would be advantageously retained in the condensing chamber plenum where it would not adversely affect condenser operation. The strategic positioning of pipe ends is commonly understood by the skilled artisan, and is no more than an obvious optimization within prior art conditions, the result-dependent variable being the retention of noncondensable gases (MPEP § 2144.05.II). Thus, by applying only known technology (i.e., installing/altering pipes) in accordance with only commonly understood principles (i.e., thermodynamics of real systems), in an obvious manner, the system disclosed by the prior art may be made to function more effectively in the passive mode, thereby increasing safety.

. As is clear from the foregoing discussion, the steps set forth in claims 17-20 are encompassed by making and using the system disclosed by Gluntz et al. (MPEP § 2112.02). The various limitations regarding directing the noncondensable gases are automatically accomplished by installing the flow channels as discussed above, and are encompassed by the normal functioning of the obvious passive system. The automatic nature of these steps directly follows from the inevitable behavior of the noncondensable gases themselves.

## *Conclusion*

4. **THIS ACTION IS MADE FINAL.** As Applicant has not amended the claims to overcome the references, and Applicant's arguments regarding the claims are unpersuasive, no new grounds of rejection are required. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexandra Awai whose telephone number is (571) 272-3079. The examiner can normally be reached on 9:30-6:00 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AA
April 18, 2007

JACK KEITH
SUPERVISORY PATENT EXAMINER